

What is claimed is:

1. A method of transferring toner images to both sides of a recording medium, said method comprising the steps of:

causing surfaces of a first and a second intermediate image transfer body to endlessly move while forming a nip in contact with each other;

transferring a first toner image formed on an image carrier to said second intermediate image transfer body via said first image transfer body;

transferring a second toner image formed on said image carrier to said first image transfer body; and

transferring, when a recording medium nipped by the nip is being conveyed toward a side downstream of said nip in a direction in which said surfaces move, said first toner image from said second intermediate image transfer body to a first side of said recording medium and transferring said second toner image from said first intermediate image transfer body to a second side of said recording medium;

wherein one of said first intermediate image transfer body and said second intermediate image transfer body is less deformable than the other in a direction of thickness.

2. In an image transferring device comprising a first and a second intermediate image transfer body whose

surfaces endlessly move while forming a nip in contact with each other, and configured to transfer, when a recording medium nipped by said nip is being conveyed toward a side downstream of said nip in a direction in which said surfaces move, a first toner image transferred from an image carrier to said second intermediate image transfer body via said first intermediate image transfer body beforehand to a first side of said recording medium and transfer a second toner image transferred from said image carrier to said first intermediate image transfer body beforehand to a second side of said recording medium, one of said first intermediate image transfer body and said second intermediate image transfer body is less deformable than the other in a direction of thickness.

3. The device as claimed in claim 2, wherein said other intermediate image transfer body has a laminate structure.

4. The device as claimed in claim 3, wherein said first intermediate image transfer body and said second intermediate image transfer body each comprise an intermediate image transfer belt passed over a plurality of support members and caused to endlessly move.

5. The device as claimed in claim 4, wherein at least one of said plurality of support members over which said first intermediate image transfer belt is passed comprises

a bias applying member configured to apply a bias to an inside surface of said first intermediate image transfer body for thereby electrostatically transferring the toner image from said image carrier to said first intermediate image transfer belt.

6. The device as claimed in claim 5, wherein said first intermediate image transfer belt has surface resistance ranging from $10^5 \Omega \cdot \text{cm}^5$ to $10^{12} \Omega \cdot \text{cm}^2$.

7. The device as claimed in claim 4, wherein at least one of said plurality of support members over which said second intermediate image transfer belt is passed comprises a bias applying member configured to apply a bias to an inside surface of said second intermediate image transfer body for thereby electrostatically transferring the toner image from said first intermediate image transfer body to said second intermediate image transfer belt.

8. The device as claimed in claim 7, wherein said second intermediate image transfer belt has surface resistance ranging from $10^5 \Omega \cdot \text{cm}^5$ to $10^{12} \Omega \cdot \text{cm}^2$.

9. The device as claimed in claim 7, wherein said second intermediate image transfer body includes a base formed of polyimide.

10. The device as claimed in claim 9, wherein said second intermediate image transfer belt is 50 μm to 600

μm thick.

11. The device as claimed in claim 9, wherein said bias applying members over which said first intermediate image transfer belt and said second intermediate image transfer belt are respectively passed each comprise a rotatable roller.

12. The device as claimed in claim 2, wherein said first intermediate image transfer body and said second intermediate image transfer body each comprise an intermediate image transfer belt passed over a plurality of support members and caused to endlessly move.

13. The device as claimed in claim 12, wherein at least one of said plurality of support members over which said first intermediate image transfer belt is passed comprises a bias applying member configured to apply a bias to an inside surface of said first intermediate image transfer body for thereby electrostatically transferring the toner image from said image carrier to said first intermediate image transfer belt.

14. The device as claimed in claim 13, wherein said first intermediate image transfer belt has surface resistance ranging from $10^5 \Omega \cdot \text{cm}^5$ to $10^{12} \Omega \cdot \text{cm}^2$.

15. The device as claimed in claim 12, wherein at least one of said plurality of support members over which said second intermediate image transfer belt is passed

comprises a bias applying member configured to apply a bias to an inside surface of said second intermediate image transfer body for thereby electrostatically transferring the toner image from said first intermediate image transfer body to said second intermediate image transfer belt.

16. The device as claimed in claim 15, wherein said second intermediate image transfer belt has surface resistance ranging from $10^5 \Omega \cdot \text{cm}^5$ to $10^{12} \Omega \cdot \text{cm}^2$.

17. The device as claimed in claim 15, wherein said second intermediate image transfer body includes a base formed of polyimide.

18. The device as claimed in claim 17, wherein said second intermediate image transfer belt is 50 μm to 600 μm thick.

19. The device as claimed in claim 15, wherein said bias applying members over which said first intermediate image transfer belt and said second intermediate image transfer belt are respectively passed each comprise a rotatable roller.

20. A method of transferring toner images to both sides of a recording medium, said method comprising the steps of:

forming a toner image on an image carrier;

causing surfaces of a first and a second intermediate

image transfer body to endlessly move while forming a nip in contact with each other;

transferring a first toner image formed on said image carrier to said second intermediate image transfer body via said first image transfer body;

transferring a second toner image formed on said image carrier to said first image transfer body; and

transferring, when a recording medium nipped by the nip is being conveyed toward a side downstream of said nip in a direction in which said surfaces move, said first toner image from said second intermediate image transfer body to a first side of said recording medium and transferring said second toner image from said first intermediate image transfer body to a second side of said recording medium;

wherein one of said first intermediate image transfer body and said second intermediate image transfer body is less deformable than the other in a direction of thickness.

21. In an image forming apparatus comprising an image carrier configured to form a toner image thereon and an image transferring device for transferring toner images sequentially formed on said image carrier to both sides of a recording medium, said image transferring device comprises a first and a second intermediate image transfer body whose surfaces endlessly move while forming a nip in

contact with each other and transfers, when a recording medium nipped by said nip is being conveyed toward a side downstream of said nip in a direction in which said surfaces move, a first toner image transferred from an image carrier to said second intermediate image transfer body via said first intermediate image transfer body beforehand to a first side of said recording medium and transferring a second toner image transferred from said image carrier to said first intermediate image transfer body beforehand to a second to a second side of said recording medium, and one of said first intermediate image transfer body and said second intermediate image transfer body is less deformable than the other in a direction of thickness.

22. An image forming method comprising:

a first image transferring step of transferring a first toner image formed on a first image carrier to a second image carrier, contacting said first image carrier, with heat and pressure;

a second image transferring step of transferring a second toner image transferred to first image carrier and said first toner image carried on said second image carrier to both sides of a recording medium with heat and pressure; and

a fixing step of causing said first toner image and said second toner image to melt and adhere to the recording

medium;

23. The method as claimed in claim 22, wherein a temperature applied to said first image carrier in said first image transferring step and a temperature applied to said second image carrier in said second image transferring step each are controlled in a range equal to or above a glass transition point of toner, but equal to or below a softening point of said toner.

24. The method as claimed in claim 22, wherein toners of a plurality of colors are used for forming a color image, and a difference between said toners in either one of a glass transition point and a softening point is 7° or less.

25. An image forming apparatus comprising:

a first image carrier configured to carry a toner image formed in accordance with image data;

a second image carrier contacting said first image carrier and configured to carry the toner image transferred from said first image carrier;

first image transferring means and second image transferring means for transferring the toner image carried on said first image carrier to said second image carrier or transferring at least one of said toner image carried on said first image carrier and the toner image carried on said second image carrier to a recording medium conveyed to a nip between said first image carrier and said

second image carrier; and

fixing means for fixing the toner image on the recording medium with heat and pressure;

wherein said first image transferring means and said second image transferring means each apply heat and pressure for image transfer.

26. The apparatus as claimed in claim 25, wherein a temperature applied from said first image transferring means to said first image carrier and a temperature applied from said second image transferring means to said second image carrier each are controlled in a range equal to or above a glass transition point of toner, but equal to or below a softening point of said toner.

27. The apparatus as claimed in claim 25, wherein a pressure applied from said first image transferring means to said first image carrier and a pressure applied from said second image transferring means to said second image carrier each are between 2 N/cm² and 10 N/cm².

28. The apparatus as claimed in claim 25, further comprising:

a latent image carrier configured to form a latent image thereon;

charging means for uniformly charging a surface of said latent image carrier;

exposing means for exposing the surface of said

latent image carrier uniformly exposed with a light beam in accordance with image data;

a developing device configured to develop the latent image with toner for thereby producing a corresponding toner image; and

primary image transferring means for transferring the toner image to said first image carrier;

wherein said first image carrier and said second image carrier comprise a primary and a secondary intermediate image transfer body, respectively.

29. The apparatus as claimed in claim 28, wherein said latent image carrier, said primary intermediate image transfer body and said secondary intermediate image transfer body have surface roughness R_z sequentially increasing in this order, and the surface roughness R_z of said secondary intermediate image transfer body is lower than surface roughness R_z of the recording medium.

30. The apparatus as claimed in claim 25, wherein said fixing means comprises two fixing members configured to fix toner on the recording medium and having a same surface property as each other.

31. The apparatus as claimed in claim 25, wherein said fixing members comprise either one of rollers and belts.